

WHAT IS CLAIMED IS:

1. A mold assembly comprising:

a mold section with a recess defining a mold cavity for receiving a molding material and forming a molded device; and

a silicon mold member disposed in said mold cavity, said silicon mold member with a mold surface facing said mold cavity, said mold surface having a contoured surface and comprising a plurality of micron or submicron size structural features defining an impression for molding said molded device.

2. The assembly of claim 1, wherein said mold member includes a plurality of recesses, about 5 to 250 microns deep.

3. The assembly of claim 1, wherein said mold cavity has a plurality of side walls and a bottom surface, and said silicon mold member is bonded to said bottom surface.

4. The assembly of claim 3, wherein said silicon mold member has an outer peripheral edge corresponding to the shape of said mold cavity, wherein said silicon mold member substantially covers said bottom surface of said mold cavity.

5. The assembly of claim 4, wherein said mold surface of said silicon mold member is substantially flat.

6. The assembly of claim 1, wherein said recesses in said mold surface are spaced apart uniformly to form rows and columns, each of said recesses having a depth of about 5 to about 250 microns and said recesses being spaced to provide a density of about 4 to about 100 of said recesses per mm².

7. An apparatus for making said molded device comprising a plurality of micron or sub-micron size structural features, said apparatus comprising:

a means for containing a mold assembly having a mold section with a recess defining a mold cavity and having a silicon mold member disposed in said mold cavity, said silicon mold member having a mold surface with a contoured surface defining an impression of said device and said structural features facing said mold cavity;

a means for introducing a plastic material into said means for containing said mold assembly, to fill said mold cavity and said contoured surface in said silicon mold member to form said molded device having a body and molded surface corresponding to said contoured surface and said structural features; and

a means for releasing said molded device from said mold section.